

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Electron fractionalization and statistics of holons in doped quantum dimer models¹ DIDIER POILBLANC, Laboratoire de Physique Theorique, CNRS & Universite de Toulouse (France) — I introduce a doped two-dimensional quantum dimer model describing a doped Mott insulator and retaining the original Fermi statistics [1]. This model shows a rich phase diagram including a d-wave hole-pair superconductor breaking translation symmetry (supersolid) at small doping, a bosonic superfluid at large doping and an exotic intermediate phase in-between. The hole kinetic energy is shown to favor binding of topological defects to the fermionic holons turning them into bosons, in agreement with arguments based on RVB wavefunctions. Results are discussed in the context of cuprates superconductors and compared with those of a related bosonic doped quantum dimer model [2]. [1] D. Poilblanc, arXiv:0711.2229. [2] A. Ralko, F. Mila, and D. Poilblanc, Phys. Rev. Lett. 99, 127202 (2007).

¹Support from the French National Research Agency (ANR) acknowledged

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Date submitted: 02 Dec 2007

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